

AUTOMATIC MONITORING SYSTEM FOR THERMAL ENERGY STORAGE PLANTS

ABSTRACT

An automatic monitoring system for thermal energy storage (TES) plants
5 wherein a pilot ice tank (11) uses Archimedes' principle to determine the ice inventory
level by measuring the resultant force (28) of the algebraic addition of the weight of
the ice and the reaction of the water pushing the ice up with a force equal to the weight
on the water displaced by the volume of the ice. The resultant force (28) applied on
a pivoting arm (37) is transferred to a liquid filled bellow (19) and is transformed into
10 hydraulic pressure. The instantaneous hydraulic pressure is transferred to a pressure
transducer (21) which converts the hydraulic pressure into an electric current. The
electric current is then sent as an electronic analog input to the central control panel
(30) of the TES for analysis or display.